

WHAT IS CLAIMED IS:

1. A three-dimensional object manipulating apparatus, comprising:
 - a display means for displaying a three-dimensional object on the screen of a display unit;
 - a rotation-axis setting means for setting an axis of rotation for the three-dimensional object on the basis of a push-in made of a dial, which can be pushed in and rotated, of a dial-operated input device;
 - a detection means for detecting the direction and angle of a rotation made of the dial of the dial-operated input device; and
 - an object rotating means for rotating the three-dimensional object being displayed on the screen of the display unit about the axis of rotation set by the rotation-axis setting means on the basis of the direction and angle of rotation, detected by the detection means, of the dial of the dial-operated input device.
2. A three-dimensional object manipulating apparatus, comprising:
 - a display means for displaying a three-dimensional object on the screen of a display unit;
 - a moving-axis setting means for setting an axis of movement for the three-dimensional object on the basis of a push-in made of a dial, which can be pushed in and rotated, of a dial-operated input device;
 - a detection means for detecting the direction and angle of a rotation made of the dial of the dial-operated input device; and
 - an object moving means for moving the three-dimensional object being displayed on the screen of the display unit along the axis of movement set by the

moving-axis setting means on the basis of the direction and angle of rotation, detected by the detection means, of the dial of the dial-operated input device.

3. A three-dimensional object manipulating apparatus, comprising:

 a display means for displaying a three-dimensional object on the screen of a display unit;

 a detection means for detecting the direction and angle of a rotation made of a dial of a dial-operated input device; and

 an object scale-up/-down means for scaling up or down the three-dimensional object being displayed on the screen of the display unit on the basis of the direction and angle of rotation, detected by the detection means, of the dial of the dial-operated input device.

4. The apparatus as set forth in claim 1, wherein:

 the detection means further has a function of detecting a speed at which the dial of the dial-operated input device has been rotated; and

 the object rotating means rotates the three-dimensional object at a speed corresponding to the speed of rotation, detected by the detection means, of the dial-operated input device.

5. The apparatus as set forth in claim 2, wherein:

 the detection means further has a function of detecting a speed at which the dial of the dial-operated input device has been rotated; and

 the object moving means moves the three-dimensional object at a speed corresponding to the speed of rotation, detected by the detection means, of the dial-operated input device.

6. The apparatus as set forth in claim 3, wherein:

the detection means further has a function of detecting a speed at which the dial of the dial-operated input device has been rotated; and

the object scale-up/-down means scales up or down the three-dimensional object being displayed on the screen of the display unit at a scale-varying rate corresponding to the speed of rotation, detected by the detection means, of the dial-operated input device.

7. A three-dimensional object manipulating method in which there are used a display unit, data processor and a dial-controller input device having a dial which can be pushed in and rotated, the method the steps of:

displaying, under control of the data processor, a three-dimensional object on the screen of the display unit;

setting, under control of the data processor, an axis of rotation for the three-dimensional object on the basis of a push-in made of the dial of the dial-operated input device, and then detecting the direction and angle of a rotation made of the dial of the dial-operated input device; and

rotating, under control of the data processor, the three-dimensional object about the set axis of rotation on the basis of the detected direction and angle of the rotation of the dial of the dial-operated input device.

8. A three-dimensional object manipulating method in which there are used a display unit, data processor and a dial-operated input device having a dial which can be pushed in and rotated, the method comprising the steps of:

displaying, under control of the data processor, a three-dimensional object on the

screen of the display unit;

setting, under control of the data processor, an axis of movement for the three-dimensional object on the basis of a push-in made of the dial of the dial-operated input device, and then detecting the direction and angle of a rotation made of the dial of the dial-operated input device; and

moving, under control of the data processor, the three-dimensional object along the set axis of movement on the basis of the detected direction and angle of the rotation of the dial of the dial-operated input device.

9. A three-dimensional object manipulating method in which there are used a display unit, data processor and a dial-operated input device having a dial which can be pushed in and rotated, the method comprising the steps of:

displaying, under control of the data processor, a three-dimensional object on the screen of the display unit;

detecting, under control of the data processor, the direction and angle of a rotation made of the dial of the dial-operated input device; and

scaling up or down the three-dimensional object being displayed on the screen of the display unit on the basis of the detected direction and angle of the rotation of the dial of the dial-operated input device.

10. The method as set forth in claim 7, wherein the data processor detects a speed at which the dial of the dial-operated input device has been rotated, and rotates the three-dimensional object at a speed corresponding to the speed of the rotation of the dial of the dial-operated input device.

11. The method as set forth in claim 8, wherein the data processor detects a speed at

which the dial of the dial-operated input device has been rotated, and moves the three-dimensional object being displayed on the screen of the display unit at a speed corresponding to the detected speed of rotation of the dial of the dial-operated input device.

12. The method as set forth in claim 9, wherein the data processing detects a speed at which the dial of the dial-operated input device has been rotated, and scales up or down the three-dimensional object being displayed on the screen of the display unit at a scale-varying rate corresponding to the speed of rotation of the dial of the dial-operated input device.

13. A computer program allowing a computer to function as:

a display means for displaying a three-dimensional object on the screen of a display unit;

a rotation-axis setting means for setting an axis of rotation for the three-dimensional object on the basis of a push-in made of a dial, which can be pushed in and rotated, of a dial-operated input device;

a detection means for detecting the direction and angle of a rotation made of the dial of the dial-operated input device; and

an object rotating means for rotating the three-dimensional object being displayed on the screen of the display unit about the axis of rotation set by the rotation-axis setting means on the basis of the direction and angle of rotation, detected by the detection means, of the dial of the dial-operated input device.

14. A computer program allowing a computer to function as:

a display means for displaying a three-dimensional object on the screen of a

display unit;

a moving-axis setting means for setting an axis of movement for the three-dimensional object on the basis of a push-in made of a dial, which can be pushed in and rotated, of a dial-operated input device;

a detection means for detecting the direction and angle of a rotation made of the dial of the dial-operated input device; and

an object moving means for moving the three-dimensional object being displayed on the screen of the display unit along the axis of movement set by the moving-axis setting means on the basis of the direction and angle of rotation, detected by the detection means, of the dial of the dial-operated input device.

15. A computer program allowing a computer to function as:

a display means for displaying a three-dimensional object on the screen of a display unit;

a detection means for detecting the direction and angle of a rotation made of a dial of a dial-operated input device; and

an object scale-up/-down means for scaling up or down the three-dimensional object being displayed on the screen of the display unit on the basis of the direction and angle of rotation, detected by the detection means, of the dial of the dial-operated input device.